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Review of South American Genus Belopoeus Schoenherr (Coleoptera, Curculionidae, Rhynchophorinae)

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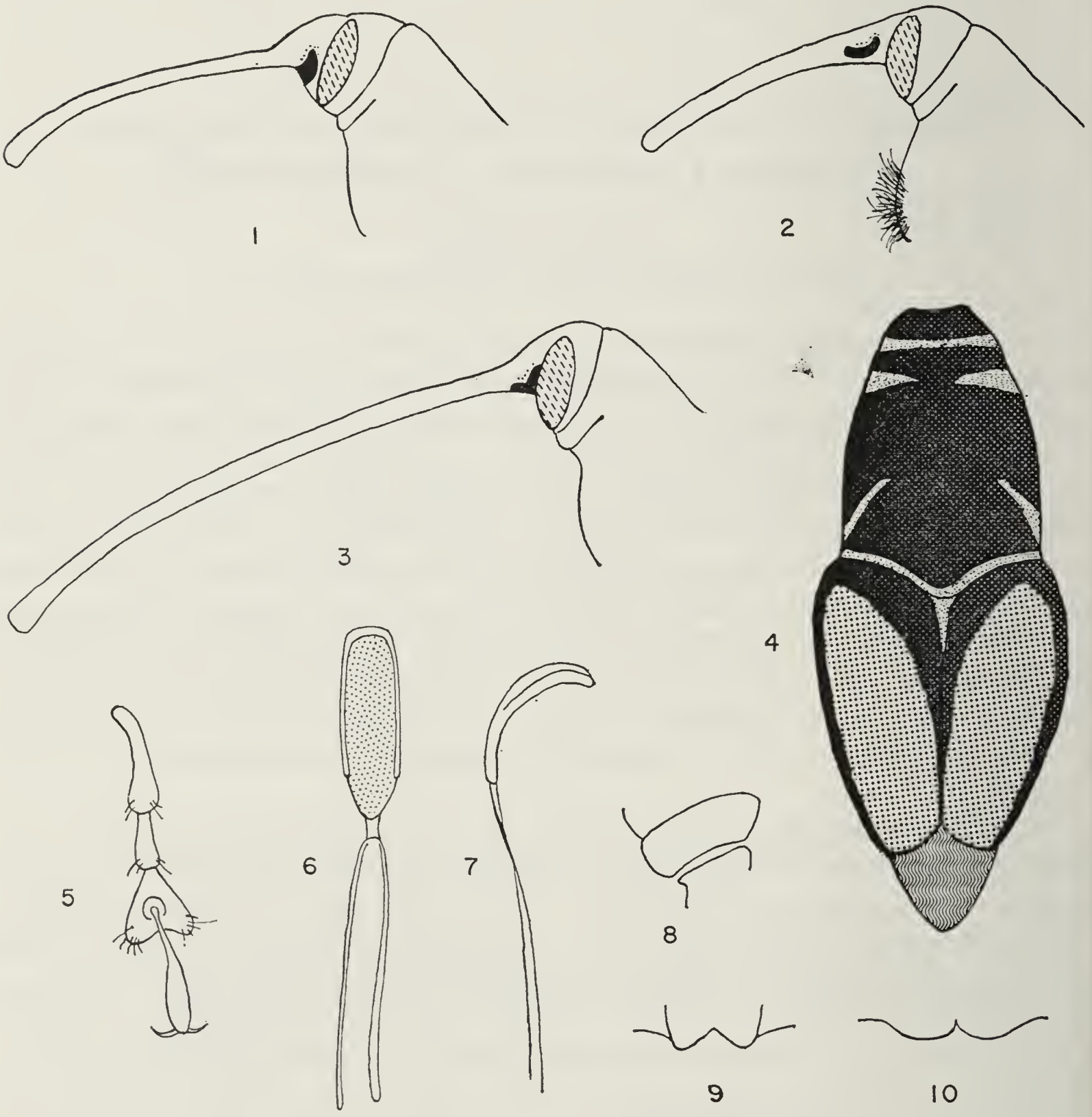
This neotropical genus of three species has never been reviewed in its entirety. Both Schoenherr (1838) and Lacordaire (1866) knew one species only. Arrow (1903) and Bondar (1954) each described one species, but did not discuss the other species. The genus, but not the species, appeared in generic keys published by Faust (1899), Heller (1926), and Vaurie (1967). These are the only references I have found to this group of weevils. Perhaps because they are rare in collections and have been so little studied, the species of *Belopoeus* have been associated for a hundred years with the wrong group of genera. Although the type of the genus was described in *Calandra,* the genus does not belong among the Sitophilini (the "Calandrides vrais" of Lacordaire), as the species do not have the mesepimeron acuminate in front, but as in fig. 8. Rather they are related to *Metamasius* Horn, or, as mentioned by Schoenherr, to *Sphenophorus,* and similar genera.

Specimens of Bondar's species (*orbignyae*) were collected by him from the dead sheaths of the "babaçu" palm, *Orbignya speciosa,* and possibly the other species are associated with this family, as are many species of *Metamasius.* According to Bondar (1954, p. 218), "The life cycle of the species is completed within the spathes of the palm. The adults feed on the pollen and lay the eggs on the inner side of the recently opened spathes. The larvae make galleries lengthwise between the large nervures of the sheath. The life of the insect is thus passed in the crown of the palm, which is probably why the species has up to now escaped the attention of collectors." [my translation]

The species are found on the northeast coast of South America from the vicinity of Belem, Brazil, to French Guiana and Venezuela; one species (*niger*) occurs also in central Brazil at 2600 feet, and in Peru, not far from the coast, northeast of Lima. All the localities are by or near rivers.

Fourteen specimens were examined for this study from the collections of the British Museum (Natural History) [BM], the Departmento de Zoologia, São Paulo [SP], and the American Museum of Natural History [AMNH]. Several more specimens of *carmelitus* have been seen in former years. I express my thanks to Mr. R. T. Thompson of the British Museum and Dr. H. Reichardt of São Paulo for their help in providing cotypes or specimens for comparisons.



FIGURES 1-3. Beaks and prosternum of *Belopoeus*. 1—*orbignyae*, female. 2—orbignyae, male. 3—niger, female. FIGURE 4. *Belopoeus carmelitus*. FIGURES 5-8. Parts of *Belopoeus*. 5—tarsus (from Bondar). 6—aedeagus, dorsal view. 7—aedeagus, lateral view. 8—mesepimeron. FIGURES 9-10. Prosternal process. 9—*B. carmelitus* and *B. orbignyae*. 10—*B. niger*.

Belopoeus Schoenherr

Belopoeus Schoenherr, 1838, p. 872. Type species, by original designation and monotypy, *Calandra carmelita* Germar, 1824.

This genus differs from other rhynchophorine genera in the combination of characters that follows (more diagnostic characters listed first): long, needle-like, cylindrical, virtually straight beak (that of females may be twice as long as pronotum); short elytra with retracted apex (fig. 4) in contrast with long pygidium (nearly as long as one-half of length of elytra); elongate, acutely pointed, triangular scutellum (at base wider than adjacent intervals); hairy prosternal process behind front coxae that overlaps mesosternum; strongly arcuate profile of prosternum that is abundantly hairy in male; longitudinally finely striate sides of first four abdominal segments of female; long antennae inserted at extreme base of beak; six-segmented funiculus of antennae; cone-shaped club of antennae, its spongy apex one-third or less of length of club; elongate peduncle of postmentum under apex of beak; widely separated eyes, both above and below; widely separated front and middle coxae; mesepimeron (fig. 8); bulbous femora; widely dilated (fig. 5), shallowly emarginate third tarsal segment that is spongy-hairy below; elongate second tarsal segment; arcuate aedeagus with faint lateral line that is evanescent behind (fig. 7), apodemes attached to sides of base of aedeagus, and forked behind (fig. 6); length, excluding beak, 7 to 12 mm.

Key to the Species of Belopoeus

1. Elytra at least half red; pronotum black with whitish lines of silky, appressed hairs along base and apex and on sides of disc from base to about middle (fig. 4).....*carmelitus* Germar
1′. Elytra (virtually) and pronotum (entirely) black, without appressed white hairs 2
2. Pronotum scarcely punctate except in basal third where two parallel, longitudinal rows of from six to eight punctures; prosternal process at apex sharply angular (fig. 9); beak of female slightly longer than pronotum (fig. 1).....*orbignyae* Bondar
2′. Pronotum uniformly finely punctuate; prosternal process at apex gently sinuate (fig. 10); beak of female twice length of pronotum.....*niger* Arrow

Belopoeus carmelitus (Germar)

Calandra carmelita Germar, 1824, p. 296, Brazil; type probably in Halle, Germany.

Diagnosis: Told at once from the other species by the color and vestiture as stated in the key, also by having the pygidium strongly tumid at middle and the basal margin of the pronotum lobed at middle.

Length, including pygidium, but excluding beak, 7 to 8.5 mm., beak of female, 4 to 5 mm. Beak slightly bent downward in apical third or fourth; beak of male slightly longer than pronotum, sparsely, finely punctate; upper edge with short

hairs; in profile slightly wider at base, and flat on upper edge at base; basal dilation (seen from above) distinctly longer than wide; of female about one third longer than pronotum; in profile slightly wider at apex, bulbous at base; impunctate, glabrous; basal dilation as wide as long. Pronotum about as long as elytra at middle line, punctures obscured by velvety surface, base strongly lobed at middle; color black, with whitish pattern (fig. 4) of hairs at apical constriction, on basal margin, and in two short basal lateral stripes. Elytra, striae punctate; color mostly red, but with black laterally and in large triangular patch from base to about middle, suture black (fig. 4), some specimens with whitish lines of appressed hairs along base and on basal part of suture. Scutellum as long as one fourth or one-fifth of length of elytra. Pygidium distinctly tumid medially from near base to apex.

Under side well punctate, with curving whitish line of hairs from apical constriction to sides of front coxa and along base of prosternum, whitish hairs also on mesepimeron and most of metepimeron, in front of hind coxa, and on side of first abdominal segment; prosternal process triangularly emarginate; male with metasternum and first abdominal segment concave and hairy, prosternum at middle hairy, tibiae on inner edges hairy.

In contrast to the other two species, the black of *carmelitus* is velvety and opaque rather than shiny. The hairs on the upper edge of the beak of the male are not present in *orbignyae* (I have no male of *niger*); the hairs on the prosternum are spread out uniformly, not in tufts as in *orbignyae* males.

Lacordaire (1866) said that the whitish dorsal and ventral vestiture was composed of scales, but it appears to me to be silky, decumbent hairs.

Specimens Examined: *Venezuela:* Caripito, July 5, 1912, 1 male (AMNH). *French Guiana:* Cayenne, 1 male, 1 female (BM). *Brazil:* 1 male, 1 female (BM); Mangabeira, Mocajuba, Para, November, 1952 (Orlando Rego), 1 female (AMNH). A specimen from *Peru* was seen at the British Museum.

Belopoeus orbignyae Bondar

Belopoeus orbignyae Bondar, 1954, p. 216, figs. 1, 2, Bacabal, state of Maranhão, Brazil; no type designated.

Diagnosis: Except for its black color, with which it agrees with *niger,* this species is more similar to the red and black *carmelitus.* Differs from both species in the punctation of the pronotum and in the long, dense, whitish hairs of the pygidium.

Length, including pygidium, but excluding beak, 8.5 to 9 mm., beak of female about 4 mm. Beak slightly bent downward in apical third or fourth; of male (fig. 2) slightly wider at base when seen in profile; about as long as pronotum; distinctly punctate; in profile flat at base; basal dilation (seen from above) longer than wide; of female about one-fourth longer than pronotum; impunctate; in profile slightly wider at apex and bulbous at base (fig. 1); basal dilation as wide as long. Pronotum black, about as long as elytra, very finely punctate except at basal third where two parallel rows of larger punctures; base obtusely rounded. Elytra black,

striae distinctly punctate. Scutellum about one-fifth of length of elytra. Pygidium slightly tumid at center, covered with long, dense, thick, white hairs.

Under side well punctate; prosternal process triangularly emarginate; one of 5 specimens examined with white tomentosity on mesepimeron, metepimeron, and sides of first abdominal segment; male with metasternum and first abdominal segment concave, and with long hairs, as on pygidium; male prosternum at middle with long hairs forming two large tufts, and tibiae on inner side ciliate.

The two hairy tufts on the prosternum of the male (fig. 2) resemble, in profile, a giant powder-puff. The hairs on the pygidium, under side, and legs are longer than those of the other species, and the prosternum is more tumid.

A female cotype has the same appressed whitish tomentosity on the under side as is characteristic of *carmelitus*. Bondar did not mention this, but he did notice the peculiar striations of the abdomen of the female, which I find are present in the other two species also.

Although Bondar's 28 cotypes were said to be deposited in six institutions, there are no cotypes in at least two of them, the American Museum of Natural History and the Field Museum, Chicago.

Specimens Examined: *Brazil:* Maranhão, October 15, 1952 (Bondar), 2 males, 1 female (BM); Bacabal, Maranhão, October 25, 1952 (Bondar), 1 male, 1 female (cotypes) (SP). All collected on *Orbignya speciosa*, a palm.

Belopoeus niger Arrow

Belopoeus niger Arrow, 1903, p. 252, pl. 28, fig. 5, "Chapada, Para," type, female, from Chapada, Mato Grosso, Brazil, in British Museum (Natural History), examined.

Diagnosis: Differs from the other two species by having the apex of the prosternal process behind the front coxae (fig. 10) scalloped or sinuate, not angular; the beak of the female longer (fig. 3); the pronotum proportionally shorter in relation to the length of the elytra; and the pygidium not at all tumid. Male not known.

Length, including pygidium, but excluding beak, 10 to 12 mm., beak of female, 8 to 8.5 mm. Beak of female very slightly arcuate, twice length of pronotum, impunctate, glabrous; in profile slightly wider at apex, bulbous at base; basal dilation (seen from above) wider than long. Pronotum black, shorter than elytra, sparsely, finely punctate, at base virtually straight. Elytra black or black with faint red apices; striae not visibly punctate. Scutellum one-fifth or one-sixth of length of elytra. Pygidium feebly convex.

Under side punctate on sides of middle and at apex, but scarcely punctate elsewhere; prosternal process feebly sinuate.

The specimen from Para, as stated by Arrow (1903), has the beak as long as the pronotum and elytra combined. The beak of *niger* is reminiscent of that of some myrmecine weevils, although those weevils have the beak flattened, not cylindrical. The antennae are inserted so close to the eye that the basal dilation is shorter than wide.

Arrow assumed, correctly, that both his specimens were females. My specimen from Satipo, Peru, is unfortunately also a female; I compared it directly with the type.

The locality of the type specimen, Chapada, is now called, according to Bokermann (1966, p. 103), Chapada dos Guimarães. It is situated at about 30 kilometers northeast of Cuiaba, at about 800 meters of altitude.

Specimens Examined: *Brazil:* Chapada, Mato Grosso, 2600 ft., November, 1902 (A. Robert), one female (type); Para (Bates), one female (both BM). *Peru:* Satipo, Jauja, May, 1948 (Paprzycki), one female (AMNH).

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FIELD NOTES

AMPHIZOA LECONTEI Matthews (Amphizoidae) were collected during the period Aug. 13 to 15, 1963 in the middle fork of the Popo Agie River, Sinks Canyon, about 5 miles south of Landers, Wyoming at an elevation of about 6500 feet. At this point the stream was quite rapid and rather cold. The entire catch of 11 adult specimens were found in foam covered pockets of calm water surrounded by rocks along the shore. Each of these pockets had water flowing into them, though in some instances at a slow rate. An average of about 1 hour was spent for each specimen collected. Ten of the adults were found clinging to pine debris (male flowers), only one was found on the side of a rock. One adult, when dropped into the water, made feeble swimming motions, but progressed slowly by these efforts. Pools were examined which contained abundant pine debris but no foam, no beetles were found in these situations. The size of the pools in which specimens were found varied from about 2 square inches to about 4 square feet.—Richard E. White, U. S. Dept. of Agriculture, Washington.